

RESEARCH NOTES

NOTES ON THE ASSOCIATION BETWEEN *HYPEROCHE MEDUSARUM* A. AGASSIZ (AMPHIPODA, HYPERIIDAE) AND THE CTENOPHORE, *PLEUROBRACHIA BACHEI* (MÜLLER)

INTRODUCTION

Biologists have long recognized the association between certain hyperiid amphipods and various other pelagic animals. *Hyperocche medusarum* has been collected living with *Aurelia aurita* as reported by Stephensen (1923) and Schellenberg (1942). It has also been noted to be associated with *Cyanea capillata* and *Tima formosa* (Bowman *et al.*, 1963). Associations between this amphipod and ctenophores have also been reported by two authors. Stephensen observed *H. medusarum* in *Beroe*, and Schellenberg examined an unspecified ctenophore housing the amphipod.

During the spring of 1969 some of this author's students discovered specimens of the cydippid ctenophore, *Pleurobrachia bachei*, inhabited by *H. medusarum*. After being led to some cognate literature through personal correspondence with Dr. Thomas E. Bowman of the Smithsonian Institution, and with the welcome help of Mr. Robert Cimberg of the University of Southern California, Department of Biology, it was determined that the relationship was undescribed. The purpose of this paper is to report the above mentioned association and present a few descriptive notes.

DISCUSSION

Specimens of *P. bachei*, collected from the coastal waters off northern California and preserved in 10% formalin solution, were examined for the presence of *H. medusarum*.

A total of 135 ctenophores has been examined to date, 20 of which housed amphipods. Four of those 20 animals were inhabited by two amphipods each making a total of 24 *H. medusarum* collected. Twenty-one of the amphipods were juveniles, ranging from 0.75 mm to 1.5 mm in length. Three adults were examined, one male (2.5 mm), and two females (2.75 and 3.0 mm). The smaller of the two females was carrying ova in the brood pouch.

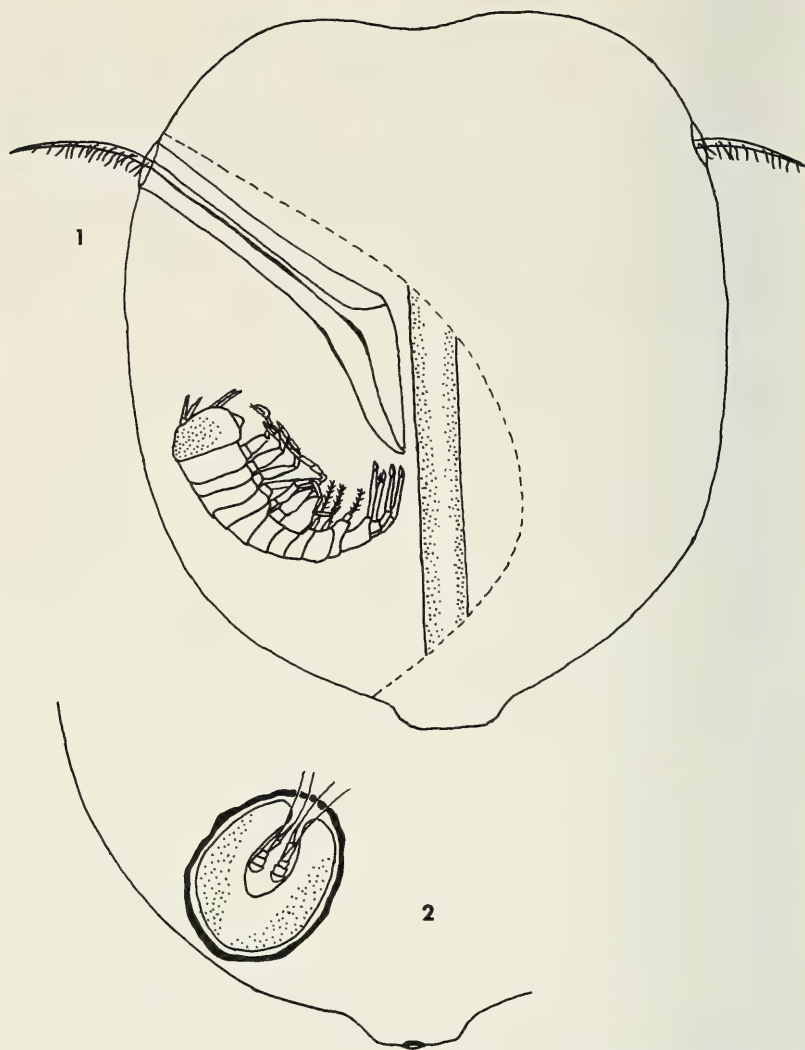


Figure 1: A dissected *Pleurobrachia bachei* showing the positions of the gut, tentacular sheath, and a (2.75 mm) female *Hyperoche medusarum* imbedded in the mesenchyme. This female was carrying eggs. Some of the amphipod's appendages are not included in the drawing.

Figure 2: An external view of a portion of the ctenophore near the mouth; showing the head of a male *Hyperoche medusarum* protruding from an orifice in the body wall of the host.

All of the specimens examined were imbedded in the mesenchyme of the ctenophores and were never very closely associated with organs such as the tentacular sheaths or gut. In all cases save one, there appeared to be no direct communication between the position of the amphipods and the outside, that is, the amphipods were completely encased within the host. Figure 1 illustrates one of the adult females inside the ctenophore. There did not seem to be any particular spot or spatial orientation preferred by the amphipods, as they were found in various parts of the hosts' bodies. The single adult male had the anterior part of its head, including the antennae stuck out of the host's body through a hole. Figure 2 shows how precisely the head fit the aperture which indicates that the animal must have formed the opening itself, but the significance of the hole is unclear.

Any statements regarding the nature of the relationship between *P. bachei* and *H. medusarum* are, at this point, purely speculative. It appears that most of the amphipods enter the host as juveniles and that they feed upon the mesenchymal contents of the ctenophore. Some reach maturity within the host and ova production apparently occurs there. *H. medusarum* is known to be free living as well as being associated with a number of pelagic animals. The adaptations as regards feeding and reproduction are not completely known. Further study with live animals will hopefully provide some information along this line.

LITERATURE CITED

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